Unit 5 In-Class review:

1. Suppose that 84% of a sample of 125 nurses working 7 AM to 3 PM shifts in city hospitals express positive job satisfaction, while only 72% of a sample of 150 nurses on 11 PM to 7 AM shifts express similar fulfillment.  Establish a 90% confidence interval estimate for the difference and interpret.
2. A doctor thinks that less than 30 percent of all persons exposed to a certain amount of radiation will feel any ill effects.  Only 9 of the 57 people exposed to such radiation felt any ill effects. Test the claim at the 0.05 level of significance.
3. Suppose in an election campaign a telephone poll of 800 registered voters under age 30 shows 460 in favor of the Republican candidate.  However a second poll shows only 520 of 1000 registered voters over age 30 favored the Republican candidate.  At the 1% significance level, is there sufficient evidence that the candidate’s popularity is different between the two age groups?
4. In a random sample of machine parts, 18 out of 225 were found to have been damaged in shipment.  Establish a 95% confidence interval estimate for the proportion of machine parts that are damaged in shipment.
5. Go back to Problem #2 and answer the following questions:
6. Interpret your p-value in context of the problem
7. What would a Type I error be in context?
8. What would a Type II error be in context?
9. What would Power be in context?
10. Go back to Problem #1. Using your interval, does there appear to be a difference between the % of nurses expressing positive job satisfaction during each shift?
11. Going back to problem #4: We want to estimate the true percent of defective machine parts with a 3% margin of error and 92% confidence. How many machine parts would we have to sample? Use the value sample proportion given in Problem #4 as a good estimate for the true proportion.
12. I want to estimate the number of people who will respond “YES” to my survey question. I want a margin of error of 6% with 99% confidence. How many people do I need to sample?
13. I have a confidence interval that is (0.42, 0.57).
14. What is my sample proportion?
15. What is my margin of error?
16. If my sample size was 60, what is my level of confidence?
17. Going back to Problem #4, explain what 95% confidence means in context.

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